

Seminars in Health Care Delivery

The Medicare Prospective Payment System Technical Adjustments and the Role of ProPAC

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This feature will appear regularly in The Western Journal of Medicine. It is intended to cover recent developments in a broad range of issues that will have an impact—either directly or indirectly—on clinical practice. Occasionally the seminars may include informed speculation about likely future developments.

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While Medicare's Prospective Payment System (PPS) has been controversial since its inception in 1983, few would question that it has the potential for generating the most far-reaching changes in our health care system since passage of the original Medicare law itself. The originators of the plan hoped to develop a system that would control if not reduce the rate of Medicare spending while maintaining the quality of hospital care and access to that care by Medicare beneficiaries. To do this, the PPS system pays hospitals a predetermined fixed amount based on the diagnosis of the illness that was primarily responsible for the patient's hospital admission, adjusted for certain characteristics of the patient—such as age and sex, and in some instances whether there are complicating factors.

Incentives of the New Payment System

By separating the payment amount from the resources used to treat a particular patient and using as the unit of measurement the complete hospital stay as opposed to the previous Medicare unit, each day of care, the new system substantially changes the financial incentives faced by hospitals. Of particular interest are the incentives to reduce the length of time patients stay in the hospital and limit the amount of resources and procedures that are used to treat patients during their hospital stay. Both factors have been singled out in the past as "culprits" in the tremendous increases in hospital costs during the 16 years following passage of Medicare and Medicaid.¹

Many students of the US health care system, however, have become very concerned about the reversal of the financial incentives embodied in this new law. While few would recommend a return to the previous system which included very few incentives to provide medical care efficiently, they are apprehensive about a system that flips these incentives

"on their ear" and puts tremendous pressure on hospitals to provide as little care as possible. Unlike a comprehensive capitated system, which has some of the same incentives, PPS does not include the same marketplace safeguards that are contained in capitated plans. Plans that provide too few services are threatened with the possibility of losing many of their members. There is also the possibility that if an illness is not appropriately treated at the outset, it could cost the plan many more dollars later in the medical cycle. Of course, PPS is not without its own safeguards which include the ethical commitments of physicians who still have the same professional and financial incentives to demand the best available treatment for their patients. But for the first time since 1965, a real tug of war could exist in certain situations between the demands of patients or their physician and the financial requirements of the hospital.

One of the strongest arguments made by the Reagan Administration in recommending the PPS approach to the Congress was that it would promote competition in the health care system and reduce the regulatory requirements of the federal government. While I believe that PPS does have the potential to foster a much greater degree of competitive forces than the previous system, many of these are not automatic or self-correcting as they would be in an Adam Smith-type free market and they require frequent technical adjustment by government. To a large extent, I believe, the success of PPS to encourage the efficient delivery of hospital care without causing serious declines in the quality of care will depend on how well these so-called technical adjustments are made.

Prospective Payment Assessment Commission

Congress, realizing the negative potentials of PPS and recognizing that it and the executive branch could use help in making these technical adjustments, created the Prospective

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ABBREVIATIONS USED IN TEXT

DAF = Discretionary Adjustment Factor
 DHHS = Department of Health and Human Services
 DRG = diagnosis-related group
 HCFA = Health Care Financing Administration
 MRI = magnetic resonance imaging
 PPS = Prospective Payment System
 ProPAC = Prospective Payment Assessment Commission

Payment Assessment Commission. ProPAC, as it is called, was mandated by the same law that created the PPS/DRG (diagnosis-related groups) system and was put in place to evaluate the effects of PPS and minimize any negative consequences. It was to include members knowledgeable about the Medicare program and the US health care system. The initial group of 15 members were appointed by the director of the Office of Technology Assessment in November 1983 and I was asked to be its chairman. The commission's role is to advise the executive and legislative branches of the government on the operation of the PPS and to provide analysis necessary to maintain and update the system. The Commission has two primary responsibilities:

- Recommend annually to the secretary of the Department of Health and Human Services (DHHS) the appropriate percentage change in the Medicare payments for inpatient hospital care; this percentage change is called the "Update Factor";
- Consult with and recommend to the secretary of the Department of Health and Human Services necessary changes in the diagnosis-related groups (DRGs), including advice on establishing new DRGs, modifying existing DRGs and changing the relative weights of the DRGs.

The first requirement, that of recommending an appropriate *update factor* to the previous year's rate, was to be accomplished by April 1 of each year. This would permit the secretary of DHHS to incorporate the commission's recommendations into the proposed and final regulations that are due by October 1 of each year. The commission has met its deadline for each of its first two reports.

Underlying the substance of the April report is the issue of whether the existing DRG system is an adequate base for compensating hospitals overall and whether there are structural aspects of the DRG system that discriminate against or in favor of specific types of patients or hospitals. If either or both indicate problems it is the responsibility of the commission to recommend appropriate technical adjustments. The commission has also indicated its willingness to consider at times more fundamental reforms if the problems appear serious enough or if previous technical adjustments have been unsuccessful in solving the problem.

Annual Adjustment in DRG Rates

The mechanism used by PPS to provide hospitals with yearly changes in the payment rate per DRG patient is the Annual Update Factor, which can be defined by the following equation:

$$\text{Annual Update} = \text{Hospital Inflation (Market Basket)} + \text{Discretionary Adjustment Factor (DAF)}$$

It is through changes in this annual update factor that Congress and the administration will decide how much this

country is willing to support the continuous growth in the American hospital system, which had been growing two to three times faster than the national economy. While the hospital inflation factor is relatively straightforward and is based on technical estimates of expected inflation for the various resources used by hospitals, the DAF component is complicated and very difficult to measure. In principle, DAF is to include a *negative* adjustment for expected or real improvements in hospital productivity and a *positive* adjustment to permit hospitals to incorporate new technological and scientific advances and to assure that the quality of care and access to hospitals is maintained at an acceptable level.

Estimating Inflation

One issue the commission focused on in deciding the appropriate inflation rate is whether a hospital's market basket should vary by region of the country. The market basket used by the Health Care Financing Administration (HCFA) included the same 18 categories of expenses for all areas of the country. What's more, the same relative weight (or importance factor) was used throughout the United States, except for area wage differences. As shown in Table 1, wages as a proportion of total expenses vary by region as well as whether a hospital is within a major urban area. Other evidence showed that wage changes also vary by region.^{2(pp 31-35)} Therefore, it seemed important to the commission that separate regional wage factors be maintained.

But what about the other components of expenses? My own view was that some variation in the non-labor expense categories might be appropriate to assure equity across hospitals. After all, fuel oil is likely to be more important in New England than in the South. A review of the evidence, however, did not support the need for such an adjustment. A study published in 1981 concluded that between 1972 and 1979 no significant differences existed between increases in the national input price index and increases in the regional input price index.^{2(p 31)} A second major conclusion was that to the extent that there were variations in the increase in the market baskets across regions, the primary cause was differences in price changes. Differences in the market basket weights had very little effect. It was this study that provided the basis for HCFA's decision not to include regional variations for non-labor expenses. The commission was concerned, however, that if overall inflation were to increase sharply above the limited inflation reflected in the 1972-1979 period, these conclusions might not hold. For example, when the price of silver went through the roof in the early 1980s, those tertiary care hospitals using x-ray and other diagnostic testing faced much larger than average price changes. ProPAC, therefore, in its first report, recommended an ongoing study to determine if multiple regional market baskets would be necessary in the future.^{3(pp 30-31)}

No easy consensus emerged with respect to the discretionary adjustments. The PPS legislation of 1983 called for a +1.0 percentage point increase to provide hospitals with continued capital for technological and quality improvements. Under a later Deficit Reduction Act this add-on was revised downward by the Congress to +0.25% percentage point for 1985 and a ceiling of 0.25% was established for 1986. The Congress left open what those rates should be for future years.

Productivity Factor

A review of the literature provided little help in sorting out the various influences affecting hospital productivity and what an appropriate technology/quality adjustment should be. With respect to productivity, it was clear to the commission that past experiences were of limited help because the incentives were primarily to enhance perceived quality of care and access and very limited rewards existed for increasing efficiency of operations or reducing costs. It therefore seemed more reasonable to use the productivity component to "reflect a policy target which encourages the attainment of the highest level of productivity that is compatible with high quality patient care and long-term cost effectiveness of the health care system."²(p 49)

Some have questioned whether it is appropriate to penalize hospitals by lowering the price they receive because they have taken actions to increase productivity. The argument has been made that if all the productivity advances lead to ultimate price reductions, then there is no real incentive for hospitals to try to become more efficient. I think that argument is fallacious on three grounds. First, if no adjustment in price resulted from these productivity improvements, all we would have done with the PPS system is generate a substantial growth in hospital profits or retained earnings. Some sharing of these productivity advances must accrue to the buyers of care, the government and the patient. Second, in a competitive marketplace improved productivity is the key mechanism that generates price reductions—not because each producer wants it to happen, but because each wants to sell more of their expanded product and now can do so at a lower price. Finally, even with such reductions in price, a hospital would still benefit financially from improving the efficiency of its operations. Reductions in price take place only gradually over time and then are based on the average performance of all the hospitals. A hospital that is in front of the pack with such improvements and exceeds the average performance of the group will reap the rewards for a longer time period and will see a permanent advantage even after the average price falls.

While the DRG unit of measurement allows the basic hospital product to be relatively standardized, there is still the

question of whether the product really begins and ends when a patient enters and leaves the hospital. The PPS system clearly provides a strong incentive to admit patients to the inpatient setting but to shift services out of that setting, both before and after a hospital stay. An important and often overlooked aspect of the system is that the initial dollar amounts for each DRG were based on the amount and duration of care provided on average to patients with the diagnoses grouped in that category before PPS started. Shifting of services to other settings may be a very appropriate and desirable outcome, but if no adjustment is made in the payment amount either directly through a recalculation of the costs in all of the DRG categories or through some adjustment in the annual update factor, then all the savings of such changes will accrue to the hospitals. Therefore, it seemed to us necessary to examine the changing patterns of care including the changing site where the services are provided. Reductions in the average length of a stay in the hospital can reflect both a real increase in hospital productivity as well as a change in the hospital product.

Quantitative evidence regarding practice pattern changes is not easy to obtain. During the initial year of investigation the commission was limited to changes in average length of stay. At the time the commission was reviewing these data they indicated that for the 65-year-old and older population length of stay had declined by 7.8% in the first nine months of 1984 as compared with the same period the year before. While such a decline continued a downward trend that has been going on since 1970 (see Table 2), the magnitude of the change following the introduction of PPS suggests a clear relationship. Translating this productivity improvement into expected cost reductions required a series of assumptions about the marginal costs associated with reduced lengths of stay. Using the 60% factor established in PPS to pay for the added cost of treating outlier patients, the 7.8% decline in length of stay resulted in an estimated 4.7% reduction in expenses. Using a conservative estimate that 1.0% of the reduction in expenses was the result of actual changes in hospital services, the commission concluded that productivity advances permitted hospitals to lower their costs by 3.7% without reducing the quality of patient care to Medicare bene-

TABLE 1.—Relative Cost Weight* From Wages by Census Division and Hospital Classification (1977 Base Year)†

Hospital Classification	US	Outlying Areas	New England	Middle Atlantic	South Atlantic	East		West		Mountain	Pacific
						North Central	South Central	North Central	South Central		
All hospitals	51.74	50.91	54.31	55.25	49.84	53.35	48.52	51.76	48.21	50.30	48.46
Teaching hospitals		52.35	55.07	56.22	52.03	54.84	50.40	52.51	51.82	52.89	51.80
Non-teaching hospitals		47.59	53.36	52.99	48.06	51.67	47.58	51.25	46.78	48.88	46.20
Hospitals in SMSA	52.06	N/A	54.58	55.36	50.05	53.77	48.63	51.89	48.28	50.50	48.57
Bedsizes (less than 100)		N/A	50.35	50.39	47.71	49.41	46.27	52.19	44.97	43.97	42.52
Bedsizes (100-404)		N/A	55.03	53.57	48.00	52.48	47.34	50.81	46.16	50.97	47.71
Bedsizes (405-684)		N/A	55.03	55.66	52.20	53.86	49.39	53.03	51.91	51.06	51.35
Bedsizes (greater than 685)		N/A	54.02	58.39	51.81	57.35	52.51	51.62	51.57	45.58	54.49
Hospitals located in non-SMSA	50.19	50.91	52.43	54.04	49.17	50.87	48.29	51.48	47.96	49.74	47.45
Bedsizes (less than 100)		44.18	51.79	50.43	47.59	50.01	47.70	51.59	48.10	49.32	46.86
Bedsizes (100-169)		47.91	52.45	53.19	47.66	50.35	48.25	51.01	47.63	49.52	48.12
Bedsizes (greater than 169)		52.72	52.77	55.21	50.79	51.68	49.17	51.76	48.08	51.28	47.82

SMSA=Standard Metropolitan Statistical Area

*Relative proportion of total resources spent by a hospital.

†American Hospital Association, Annual Survey, 1977. Compiled by: Office of Research, Demonstrations, and Statistics, HCFA. Source: *Technical Appendixes to the Report, April 1, 1985, Prospective Payment Assessment Commission*, p 33.²

ficiaries. In an attempt to share these savings with the hospital industry, the commission recommended that the next annual update rate should be reduced by 1.5% for productivity and further reduced by 1.0% for the product shift. HCFA in its final set of regulations for the 1986 update rate used similar logic and arrived at similar productivity adjustment numbers.^{4(pp 44-59)} But they arrived at total update rate of 0% because they determined that hospitals had inappropriately inflated the case level of the patients they treated and thereby received an excess in total payments from the government. Congress, after much political "horsetrading" with the administration, provided hospitals with a 0.5% increase for 1986. In so doing Congress adopted many of the recommendations in ProPAC's first April report.

It was clear to the commission that future adjustments would require a better understanding of how these forces really operate or else hospitals would either reap inappropriate windfalls from PPS or be penalized unnecessarily. In its second April report the commission continued to use the same basic approach. Although length of stay reductions slowed to 2.9% compared with 7.8% the previous year, further productivity gains through less use of ancillary tests were observed. In total, the commission concluded that hospitals could reduce their costs by 1.5% through productivity gains.

An Allowance for Technological Change

The last aspect of the discretionary adjustment factor is the appropriate positive adjustment for providing hospitals with an allowance for new procedures, techniques or technologies to enhance the quality or access to the care they provide. This issue also ties in with the second major charge of the commission, that of recommending adjustments to the basic DRG structure of the system. Under the previous cost-based system, adjustments were instantaneous and complete and required no special mechanism; if some new procedure was

considered appropriate, it was considered a covered service and its costs were immediately incorporated into the cost report and ultimately would be paid. Under PPS no such automatic adjustment exists. This is both a strength of the new system and a component that gives critics much to complain about. Left alone PPS will not pay a hospital any more money for either providing more traditional services to a patient or adding a new service which may be quality enhancing but which is cost generating. The question is, "How do you maintain this tight incentive to force hospitals and physicians to ask the question whether the extra test or procedure or day of care is really that necessary and yet assure that if the answer is truly yes, there will be funds to pay for it?"

The annual update adjustment for technology and quality is supposed to provide some financial cushion to allow the hundreds of small improvements in hospital care to continue, and to leave to a structural change in specific DRGs larger and more targeted changes. As shown in Table 3, after adjusting for hospital inflation and changes in admissions, hospital spending for inpatient Medicare services grew by 2.8% a year between 1972 and 1983. A major portion of this "intensity factor" was funds used by hospitals to buy quality-enhancing technologies. It also included spending for some items that had very marginal benefits to patient care. Clearly if hospital spending is to be reduced, some of this yearly "real" growth in hospital spending needs to be reduced. How much a reduction is appropriate is both a technical and a political question. That is, what will we lose by reducing such spending and are we as a country willing to pay the added cost of continuing to improve the level of medical care? The commission recommended in the first year update an amount equal to 50% of the average intensity factor for the past 12 years, or between 1.5% and 2.0%. In the second year annual update, this portion of the technology adjustment was reduced to 0.7% recognizing that the commission was recommending several adjustments to the DRG structure for technology or new medical procedures such as magnetic resonance imaging and more complicated cardiac pacemakers that would add to the total hospital payment amount.

In summary, the commission recommended that the update factor be equal to the estimated increase in the medical market basket plus a -1.0% for the Discretionary Adjustment Factor in 1986 and -0.5% in 1987. The commission also recommended that a further adjustment be included to the extent that hospitals had upgraded the coding weight for illness after PPS began. The commission felt that such coding adjustments not related to the treating of more sick patients will generate inappropriately higher payments to hospitals and should be taken back by the government before they are built into the hospital payment base. A major difference with HCFA developed over this issue for the 1986 adjustment as the executive branch sought to reduce the expenditure factor to compensate for such coding "creep" since the inception of PPS.^{4(pp 18-25)} The commission felt the adjustment should be limited to such changes for only the previous year.

A comparison of the update adjustments recommended by ProPAC for 1986 and the approved HCFA adjustments are shown in Table 4. Also shown in Table 5 are the estimated ProPAC adjustments for 1987. If 1987 follows the same pattern as 1986, the administration will use only a limited

TABLE 2.—Trends in Inpatient Hospital Length of Stay

Calendar Year	Percent Change in Length of Stay			
	ALOS,* All Patients (Percent)	Percent Change	ALOS,* 65+ Patients (Percent)	Percent Change
1970	7.82	-3.08	12.62	-3.00
1971	7.66	-1.96	12.62	-3.10
1972	7.56	-1.38	11.74	-3.95
1973	7.44	-1.54	11.40	-2.92
1974	7.38	-0.81	11.31	-0.79
1975	7.38	0.04	11.23	-0.69
1976	7.37	-0.12	11.05	-1.62
1977	7.25	-1.74	10.71	-3.02
1978	7.22	-0.31	10.59	-1.20
1979	7.15	-1.05	10.39	-1.90
1980	7.18	0.47	10.38	-0.09
1981	7.21	0.37	10.36	-0.12
1982	7.16	-0.61	10.13	-2.27
aver. (1970-82)	7.37	-0.90	11.09	-1.80
1983	7.02	-2.04	9.68	-4.47
1984	6.66	-5.00	8.94	-7.60
1985 (8 mos.)	6.54	-2.10	8.74	-2.90
aver. (1983-85)	6.74	-3.10	9.12	-5.00

Source: Technical Appendices to the Report, April 1, 1985, Prospective Payment Assessment Commission, p 14.²

*Average length of stay, in days.

number of the ProPAC recommendations as far as the update factor is concerned. Congress, on the other hand, is more likely to take the ProPAC recommendations seriously even though it might not accept the bottom-line recommendation. The commission, of late, has been required to defend its update recommendation as politically too high. At the same time some in the medical community feel ProPAC has been too tough in recommending increases less than the overall inflation rate. In commenting on the issue the commission stated in its 1987 report,

In the current environment of fiscal stringency an estimated 2.8 percent increase in PPS payment amounts for fiscal year 1987 may seem unduly high. Hospitals received no increase for the first half of fiscal year 1986, and may receive a net reduction for the second half of the year if the Gramm-Rudman-Hollings deficit reduction act is upheld. The President's proposed budget for fiscal year 1987 estimates a 2.0 percent increase in PPS payment rates. The Commission recommended increase is very stringent compared to historical trends in Medicare payments to hospitals, however. Between 1972 and 1983, these payments averaged about 3 percentage points *above* inflation, whereas the Commission estimates its recommendation for fiscal year 1987 to be 1.5 percentage points below inflation.^{5(p 9)}

Changing the DRG Structure

Regardless of the decision on the update factor, providing hospitals with an overall cash allowance for new technologies does not guarantee that desirable new procedures or devices will be bought or used. These funds are ultimately usable for any purpose. Therefore, pressure continues to be placed on making adjustments in specific DRGs or adding new DRGs for a new procedure or device. In most cases a structural change decision is a two part decision. Is a change medically required; that is, does the new procedure add appreciably to the quality of medical care? If the answer is yes, the next question is how should the change be made? If a particular procedure is clearly focused on a specific type of diagnosis, a new DRG can be constructed, as HCFA proposed in 1986, for operations involving a bilateral hip replacement as opposed to a single hip operation. Alternatively, the new procedure can be moved to an existing DRG that closely reflects the new cost

of treatment. The system also can be allowed to correct itself through periodic "recalibrations" of the actual costs incurred in treating all DRGs, or by "reweighting" a specific DRG to better reflect the new resource cost that includes the new procedure. An example of the latter is the growing use of intraocular lens implants for the treatment of cataract extractions. During the short period between 1981 and 1983 the number of extractions using the more expensive lens implants increased from 58% to 85%. The commission decided not to make any specific adjustments in DRG 39—Lens Procedures—but rather to allow the change to take place through a recalibration of the resource weights for all DRGs. This recommendation was followed by HCFA and the weight assigned to DRG 39 went up by more than 15%.

Two types of technology changes are not so easy to adjust for in PPS and could have long-term consequences in the years ahead. I would like to conclude this article with a discussion of what we should do with cases where there is more than one procedure or device that can be used for the same diagnosis, but where the resource costs are very different; and, how we should incorporate into the system new high-cost technologies or procedures that treat many different illnesses but are used only in a select number of hospitals.

Alternative Treatments for Same Diagnosis

Among the 468 active DRG categories are four used for patients with a heart condition that requires a pacemaker implant. Differences in the payment rate of the four DRGs relate to whether the implant is part of more extensive and complicated care, whether it is just focused on the implant surgical procedure or whether it is payment for an adjustment or replacement of the pacemaker. To complicate the story, there are also four different types of pacemakers which vary considerably in expense. The current PPS does not recognize any difference in device cost expense. In 1981 there were 15% of implant patients who had the least expensive "single chamber nonprogrammable" pacemaker and 6% who had the most

TABLE 3.—Historical Annual Percentage Changes in Medicare Inpatient Hospital Costs, 1972-1983, and Projections for 1984 and 1985, by Components

Calendar Year	Medicare Inpatient Hospital Costs (Percent)	Market Basket			Medicare Admissions			Inpatient Costs Per Admission (Percent)	Intensity (Percent)
		Hourly Earnings Hospitals (Percent)	Nonlabor Inputs (Percent)	Total (Percent)	Medicare Enrollees (Percent)	Admissions Per Enrollee (Percent)	Total (Percent)		
1972	10.9	6.8	4.5	5.9	1.4	1.2	2.6	8.1	2.1
1973	16.4	5.5	8.0	6.5	6.5	7.1	14.1	2.0	-4.2
1974	23.6	7.7	14.2	10.4	6.2	0.3	6.5	16.1	5.1
1975	22.5	9.9	12.2	10.9	3.4	0.1	3.5	18.4	6.7
1976	19.0	8.2	8.3	8.2	2.9	1.5	4.4	14.0	5.3
1977	17.3	7.1	7.9	7.4	3.0	4.5	7.6	9.0	1.5
1978	14.8	8.4	7.9	8.2	2.7	-1.8	0.9	13.8	5.2
1979	16.4	8.4	11.1	9.6	2.7	2.9	5.7	10.1	0.5
1980	20.3	10.6	12.8	11.6	2.1	2.4	4.6	15.0	3.1
1981	21.6	12.3	11.2	11.8	1.9	1.8	3.7	17.3	4.9
1982	16.1	11.0	7.3	9.4	2.1	1.9	4.0	11.6	2.0
1983	13.0	7.2	4.8	6.2	1.5	3.1	4.6	8.0	1.7
Average	17.6	8.5	7.7	8.8	3.0	2.1	5.2	11.7	2.8
Projections:									
1984	11.8	6.4	4.4	5.9	1.8	2.0	3.8	7.7	1.7
1985	12.5	7.7	4.6	7.1	2.1	2.0	4.1	8.1	0.9

From the 1984 Annual Report of the Board of Trustees of the Federal Hospital Insurance Trust Fund, April 1984, Table A1, p 53.
Source: Technical Appendixes to the Report, April 1, 1985, Prospective Payment Assessment Commission, p 51.²

expensive "dual-chamber programmable" model. By 1984 these utilization figures were reversed with only 3% having the least expensive model and 26% the most expensive unit. In 1984 the cost of the most expensive model was almost twice as high as the lowest cost unit (\$5,171 versus \$2,741). In addition to differences in device costs, there are also related differences in the surgical and physician cost of implantation. Question: How should the changes from 1981 to 1984 be reflected and, more important, should the DRG price reflect differences in the device costs?

The first part of the question is similar to the intraocular lens issue and the commission ruled the same way (for example, let recalibration adjust for the changes), but the second part is complicated and has no easy answer. If the DRG prices vary based on the device or resources used in the treatment, then the system has backed into the same set of incentives that existed under cost based reimbursement. If no adjustments are made and hospitals are paid based on the average of all the potential devices, then for those patients who are treated with the least expensive model the hospital is paid too much and for

those patients implanted with the most expensive model, the hospital incurs losses. In part, I believe we want a payment system that forces hospitals and physicians to question whether the most expensive device or procedure is really that necessary. But we do not want the system to so penalize hospitals for a particular type of care that they are compelled to deny such services to some patients who need them and who would, on their own, be willing to pay the added expense. Thus far, neither HCFA nor the commission has come up with an acceptable solution. My own view is the PPS needs a payment mechanism for situations such as this where the hospital has some financial incentive to use the least costly device, but where the losses of using the most costly device are limited and could be absorbed by the hospital, if they wished, from the technology allowance in their update factor.

One possible mechanism to accomplish this is to divide the hospital payment into two parts. The first would reflect the average resource cost for treating all patients with a similar diagnosis; the second would be tied to the specific resources used to treat that particular patient.* In the case of a pacemaker patient such a revised DRG payment would limit the loss to the hospital that implanted the most costly device to the equivalent of a 12.5% coinsurance rate assuming that there were just the high and low cost models and each was used about the same amount. Such a rate while high enough for a hospital to question a physician who always used the most expensive device would still be low enough to permit any patient who needed the more expensive model to receive it. It should be remembered that under current law a patient can *not* agree to pay the hospital a *supplemental* amount to insure that he or she gets the most expensive model. If the PPS payment is not adjusted to reflect a higher rate for certain procedures or devices, I think pressure will build to allow such supplemental payments. Advocates of one-class medicine will fight against such a move since patients with limited income could not afford to supplement the Medicare payment.

During debate on its 1987 recommendations, ProPAC briefly considered such a proposal and rejected it in favor of requesting that HCFA split the pacemaker DRGs to reflect whether the patient was given a single chamber or a dual chamber pacemaker.^{5(pp 99-102)} If HCFA rejects this recommendation and Congress does not overrule them the blended rate adjustment may yet be used for certain types of patients.

High Device Costs in Multiple DRGs

An example of the second problem area is the issue of how to pay for new diagnostic technologies such as magnetic resonance imaging (MRI). MRI is a very expensive technology costing up to \$2 million per machine plus operating expenses. Even at maximum efficiency, the operating expenses alone equal about \$130 per scan. It is likely that an MRI scan could be called for in more than 100 different DRGs, and therefore no specific DRG adjustment is possible. HCFA is proposing that no MRI adjustment be made, and that payments increase gradually through annual recalibration in those DRGs that use MRI scans. Such payments, however, will be available to all hospitals whether or not they have MRI and for all patients in those DRGs whether or not a scan was done. As such, for

*Suggested in an unpublished manuscript, "Restructuring the DRG System," by Prof Thomas McGuire, Department of Economics, Boston University, Boston, Massachusetts.

TABLE 4.—Estimated Increase in PPS Payment Amounts for Fiscal Year 1986: Comparison of HCFA to ProPAC Recommendations

Increase in Payments	HCFA (Percent)	ProPAC (Percent)
FY 86 Market Basket increase	4.85	4.85
Previous Market Basket forecast errors	-1.30	-0.57
Policy Target Adjustment Factor (DAF)	-1.50	-1.00
Components:		
Productivity	-1.00	-1.5 to -2.0
Cost-effective technologies	1.50	1.5 to 2.0
Product change		-1.0
Cost-ineffective practice patterns	-2.00	
Subtotal (Market Basket+DAF)	2.05	3.28
Observed change in case mix	-4.90	-2.00
Real case-mix change during FY 85	0.00	0.80
Total	-2.85	2.08
Proposed increase	0.00	2.08

Source: 1986 Adjustments to the Medicare Prospective Payment System, Report to the Congress, November 1985, Prospective Payment Assessment Commission, p 19.⁴

TABLE 5.—Recommended Projected Payment Assessment Commission Increases in PPS Payment Amounts for Fiscal Year 1987

Recommended Increase	1987 (Percent)
Estimated Market Basket increase	4.6
Correction for Market Basket forecast errors in previous fiscal year	-0.3
Discretionary adjustment factor	-0.5
Scientific and technological advancement	0.7
Productivity	-1.5
Site substitution	-0.6
Real case-mix change in fiscal year 1986	0.9
DRG case-mix index	0.2
Within-DRG patient complexity	0.7
Subtotal (update in standardized amounts)	3.8
Observed change in case-mix index (adjustment made to DRG weights after recalibration)	-1.0
Total change in DRG prices	2.8

Source: Report and Recommendations to the Secretary, US Department of Health and Human Services, April 1, 1986, Prospective Payment Assessment Commission, p 19.

those institutions that do purchase a machine, the extra payments they receive will be far less than the cost of operating the equipment. Also, for those patients who do receive a scan, the payment level will only pay a small proportion of the added costs of the procedure.

What kind of signals will such a payment approach send to MRI manufacturers and, more important, to future manufacturers of expensive medical equipment? As an alternative, the commission has recommended that a specific amount be paid to any hospital that orders a scan regardless of whether they own the machine. This will focus the payments on those institutions that own and use the machine or those that purchase such tests from other sources. The amounts recommended by ProPAC are rather stringent and assume a machine is used to maximum efficiency.^{5(pp 107-111)} The funds for this MRI add-on would be subtracted from the technology portion of the annual update amount. Critics of this approach argue that this is a major complication to the system and directly rewards only this one technology. While this may be true, we do have to face the much bigger issue that unless changes are made, the PPS approach could force medical equipment manufacturers to cut back substantially on research and development investments in quality enhancing but costly new medical devices and procedures. Some cutbacks may be appropriate but it is not clear that Congress wished to freeze our hospital care system with the technologies of the 1980s. Again, this is an issue that deserves much broader debate than it has received. How it is resolved could greatly affect both the efficiency of today's hospital system and the availability of new technologies for our future hospital system.

Conclusion

The Prospective Payment System, adopted by Medicare in 1982 to pay for inpatient hospital claims, is a radical departure from the retrospective cost-based system it replaced. The previous system, while modified several times, had been in place since 1965. The major difference between the two lies in the financial incentives they offer to hospitals once a person is admitted as an inpatient. The former system assured a hospital full payment for any approved service, test or day of care. The opposite is true for PPS. Once a patient is admitted and the likely DRG category is established the rate of payment is fixed. Any extra service, test or day of care adds expenses for the hospital but no additional revenue.

A related aspect of the new payment system is that changes in the way medical care is practiced do not automatically change the payment system. This is both a major advantage of the new system and a very significant challenge to those responsible for the ongoing operation of the program.

As might be expected, there are many critics of this new approach to paying hospitals. Some question its basic design and believe that it cannot succeed no matter how thoughtfully it adjusts to its perceived problems. They believe it is based on an inherently flawed approach. Others, myself included, believe that there are many very desirable aspects of PPS which, if appropriately modified, can form the basis of a long-term hospital payment system. Regardless of which camp a person is in, PPS is the law of the land and is not likely to be replaced in the immediate future. It is therefore incumbent on all of us to make it work better. By that, I mean it should pay hospitals in total at a level that reflects the attitude of all Americans as to the type and quality of the hospital system they want and are willing to pay for. It should also include the correct structural characteristics to assure that the individual patient receives the appropriate amount and type of care consistent with the cost of that care and the medical benefits it produces.

There are those who believe that PPS should be viewed as an interim, transitional system to some form of total capitated or Medicare voucher plan. While there is much to commend a capitation system and I believe the current capitation option for Medicare beneficiaries will continue to grow, I do not believe it is a panacea for all the problems raised by PPS. All our current knowledge about how capitated medical plans operate is within a total medical system that has been very liberally funded for new medical procedures and devices and that has sufficient funds from other sources to assure that the system has adequate backup capacity. Suppose all medical care in the United States was delivered by various forms of fixed capitated plans. Under this condition, could we be assured that our total health care system would receive adequate funds to provide the level and quality of medical care we want? And would such a system provide the right incentives to medical researchers and equipment manufacturers to invest in the research and development needed to keep the quality of our system at the level we want and are willing to pay for? I do not think we know the answers to these questions. Even worse, I don't even hear these questions being discussed!

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